

CLAIMS

1. (AMENDED) In a photoelectric conversion device using a first conductivity type semiconductor substrate having convex and concave portions formed on its surface, the device being characterized in that it comprises at least:

a second conductivity type semiconductor layer formed on the surface of the first conductivity type semiconductor substrate;

a front electrode connected to the second conductivity type semiconductor layer; and

a rear electrode formed on the rear surface of the first conductivity type semiconductor substrate,

the second conductivity type semiconductor layer being at its partial area contact with the front electrode and becoming thinner as it goes farther from the contacted area.

2. The photoelectric conversion device according to claim 1, wherein the convex portions of the semiconductor substrate are arranged at given intervals and the second conductivity type semiconductor layer becomes thinner from the convex portions to the concave portions of the substrate.

3. The photoelectric conversion device according to claim 2, wherein each convex portion has the front electrode.

4. The photoelectric conversion device according to claim 1, wherein the convex portions of the semiconductor substrate are arranged at given intervals and the second conductivity type semiconductor layer becomes

thicker from the top of the convex portions to the concave portions of the substrate.

5. The photoelectric conversion device according to claim 4, wherein each convex portion has the front electrode.

6. (AMENDED) A method for manufacturing a photoelectric conversion device comprising the steps of:

(a) forming a film serving as a barrier against impurity diffusion on a semiconductor substrate having convex and concave portions formed on its surface in such a manner that the film becomes thicker from the convex portion to the concave portion; and

(b) implanting second conductivity type impurities into the semiconductor substrate through the film to form a second conductivity type semiconductor layer on the surface of the semiconductor substrate; and

(c) forming a front electrode that is in contact with the convex portion which constitutes a part of the semiconductor substrate surface.

7. Canceled

8. (AMENDED) A method for manufacturing a photoelectric conversion device comprising the steps of:

(a) forming a film containing second conductivity type impurities on a semiconductor substrate having convex and concave portions formed on its surface in such a manner that the film becomes thicker from the convex portion to the concave portion; and

(b) implanting second conductivity type impurities into the

semiconductor substrate from the film to form a second conductivity type semiconductor layer on the surface of the semiconductor substrate; and

(c) forming a front electrode that is in contact with the concave portion which constitute a part of the semiconductor substrate surface.

9. Canceled